



Hyperbaric Oxygen Therapy for Large Composite Grafts: An Alternative in Pediatric Facial Reconstruction

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Abstract

Background: Management of pediatric facial defects can be challenging, as reattachment of large composite grafts is usually unsuccessful. Hyperbaric oxygen therapy (HBO) has been researched to augment composite graft survival, but clinical use for this application remains anecdotal. The authors present their successful experience managing select cases with large composite grafts and HBO as an adjunct.

Methods: A retrospective chart review identified children presenting with facial defects and managed operatively with large composite grafts ($\geq 1.5 \times 1.5$ cm) and HBO therapy. Records were reviewed for defect characteristics, management details, and outcomes at last follow-up.

Results: Nine children (avg. 8.4 years, range 1.6-15.1) presented with ear or nose defects secondary to dog bites (n=7), falls (n=1), or congenital causes (n=1). Three experienced ear amputations, and six suffered nasal avulsions of varying degrees. All avulsed ears were reattached. Three cases of nose avulsions were reattached; the other three underwent secondary reconstruction with composite ear grafts. HBO was initiated immediately and continued for 8-10 days. All grafts survived at least 80% with no

postoperative complications. At last follow-up (avg. 30.1 months; 0.8-63.9), all patients demonstrated good cosmetic results with minimal residual deformity.

Conclusion: When reconstruction of pediatric facial defects warrants a large chondrocutaneous graft, immediate postoperative HBO therapy can increase survival. Particularly when reattaching amputated segments, if successful, this approach offers an anatomically ideal result without donor site morbidity. If unsuccessful, it does not "burn bridges" and decreases the extent of secondary reconstruction. The authors present their HBO protocol along with a review of available literature.

Keywords: Composite graft; HBO; ear amputation; facial reconstruction; facial trauma; hyperbaric oxygen; nose amputation; pediatric; replantation.

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